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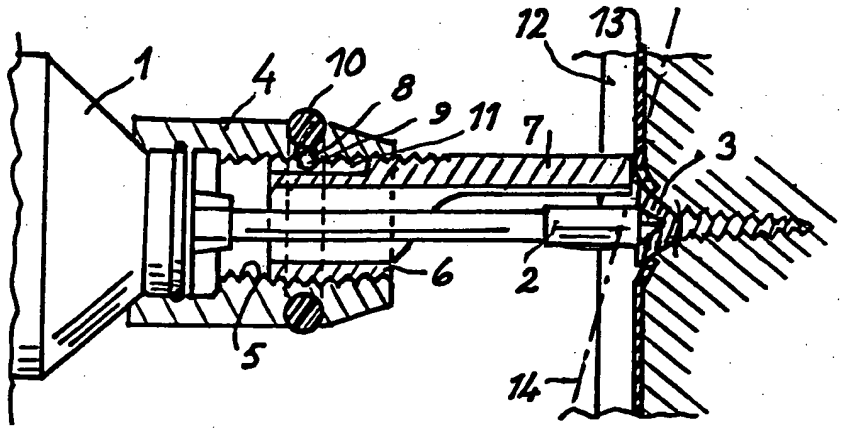

(57) Abstract

The invention relates to a stop member or dog (7) for a screwdriver hand tool (1) with a motor driven screwdriver (2). Known screwdriver hand tools have a number of disadvantages, like the difficulty to aim the tip of the screwdriver since the stop member is blocking the view, the difficulty to change between screwdrivers or so-called bits, which requires a temporary removal of the stop member, the difficulty to reach to screw in narrow spaces where there is not enough space for the stop member, and above all the difficulty to unscrew a screw that has got askew, since the automatic clutch in the screwdriver hand tool cannot be made to engage the drive of the screwdriver hand tool unless the screwdriver is pushed in a bit further than what is possible with a screw that has been screwed in all the way. With other words the stop member must be removed. These inconveniences are eliminated with the device according to the invention by means of the stop member (7), that has a ring-shaped holder (6), which is provided with threads (5') and is designed with a forwardly pointing finger (7), that is positioned parallel to the screwdriver (2) at a small distance from this with a tip located in desired position relatively to the tip of the screwdriver.

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SCREWDRIVER PROVIDED WITH ADJUSTABLE DOG.

The present invention relates to a device of the type stated in the introduction of the following claim 1.

A device of this type is known per se, whose stop member or dog comprises a tubular extension of the ring-shaped stop member holder affixed to the screwdriver hand tool. The screwdriver or screwdriver bit will by that be well covered practically throughout its entire length, and the free end of the stop member can be arranged to enclose the screwdriver with a small space, which latter is important for the sake of availability.

This design known per se, involves however some disadvantages. In narrow spaces it is difficult or impossible to see the tip of the screwdriver and the groove in the screw head because the front portion of the stop member blocks the view. Furthermore the screw sometimes gets askew and therefore needs to be unscrewed. This can not be done without trouble because of the function of the stop member and the screwdriver hand tool resulting in that the motor drive of the screwdriver stops when a screw is completely screwed into an object. The stop member must therefore temporarily be removed from the screwdriver hand tool while the screw is unscrewed, and after that be replaced on the screwdriver hand tool. Also when changing between different screwdrivers or so called bits the stop member must be temporarily removed.

Also power-drills can be provided with stop members. These usually are of the type with an arm mounted on the side of the power-drill that is axially adjustable and lockable at a fairly large distance from the axis of the drill. Such a design is for obvious reasons not usable together with a screwdriver hand tool. The object of the invention is to bring about a device of the kind stated in the introduction, where the mentioned inconveniences are eliminated in a particularly simple way.

This has been achieved in accordance with the invention with an arrangement having the characterizing features set forth in the following claim.

By the new design of the stop member an increased availability is achieved. The screwdriver hand tool can in most cases be held so, that the forwardly pointing finger of the screwdriver hand tool does not block the view of the tip of the screwdriver or the groove in the screw head. Furthermore is it easy to reach to screw in narrow spaces, since the forwardly pointing finger of the stop member needs very little space. The perhaps most important advantage is, however, that a screw that has got askew can be unscrewed without removing the stop member. The screwdriver hand tool can, as a matter of fact, be leaned, despite the stop member, so that the tip of the screwdriver reaches enough into the groove of the screw head so that the screwdriver will be displaced the distance required to bring the motor drive to start.

These operations are made easier if the stop member is affixed on a rotateable sleeve in the front portion of the screwdriver hand tool, as stated in claim 2, whereby the finger of the stop member can be turned to desired angular position. Furthermore or alternatively the device can be designed according to what is stated in claim 3, so that the depth-adjustment can not be altered unintentionally when turning the casing.

The invention is more closely clarified with reference to the accompanying drawing which shows schematically an embodiment of the device according to the invention, and in which Figure 1 is a longitudinal section and Figure 2 is a planview from above showing the front portion of the screwdriver hand tool with the device according to the invention while screwing down in a narrow tin groove, and Figure 3 is a planview from ahead with the position of the groove marked with dot-dash lines.

The hand-tool shown on the drawing is a screwdriver device of the usual kind, that has a built-in clutch, that makes the screwdriver 1 turn or rotate when being displaced axially a few mm when pushed against the groove of a screw head 3.

On the front portion of the screwdriver hand tool, which is cylindrical, an easily removeable sleeve 4 is attached so, that it with some friction can be turned around. In the sleeve 4 an inner threading 5 is arranged in an axial through bore, in which a ring-shaped holder 6 of a stop member designed as a forward, from the holder 6. pointing finger 7 that is threaded to a desired depth through a threading 5' on the outside of the stop member holder 6. In the sleeve 4 is at least one radial hole 8 arranged, in which a ball 9 is enclosed elastically pushed inwards by a rubber ring 10 arranged in a peripheral groove on the outside of the sleeve 4. Four axial grooves 11 are arranged with 90° partition in the threadings 5, so that the stop member holder 6, when turned in relation to the sleeve 4 will present four distinct positions per revolution, corresponding to four axial positions of the finger 7 per revolution. Furthermore, as mentioned, the sleeve 4 and therefore also the stop member holder 6 with the finger 7 are freely turnable without altering the depth-adjustment of the finger 7. The finger 7 only obtains optional positions around the screwdriver 2.

As shown in Figures 2 and 3 the tip of the screwdriver 2 and the finger 7 of the stop member can be inserted into a narrow groove 12 in a tin profile 13 which is an essential advantage with the device according to the invention. Due to the possibility to turn the stop member holder 6 with the finger 7 around the screwdriver 2 to desired position is it not necessary to turn the entire screwdriver hand tool 1 to the corresponding position, which can be an uncomfortable working position.

The particular advantage with the device according to the invention, namely the possibility to be able to unscrew a screw that has got askew with the stop member remaining in position, depends on the characteristic of the stop member, that it permits the screwdriver hand tool to be lent so that the tip of the screwdriver reaches sufficiently outside the tip of the finger 7 so the screwdriver 2 will be pushed back the distance required to make the screwdriver hand tool start rotating the screwdriver when pushed into the groove of the screw head 3.

The screwdriver 2 then makes an angle with the surface marked with the dot-dash line 14, by which the increased range for the screwdriver 2 is clearly shown compared with when the screwdriver is directed perpendicular to the surface.

Due to the open exposure of the front portion of the screwdriver 2 relatively to the stop member the changing between different so called bits is made easier. Furthermore, the equipment of an automatic screw feeding arrangement is made easier.

CLAIMS

1. Device for handtools of the type comprising a motor driven screwdriver hand tool (1) equipped with a stop member or dog (6,7) comprising a cylindrical, ring-shaped stop member holder (6) positioned coaxially to a screwdriver bit (2) which holder is provided with threads (5) and is threaded to a desired depth into a boring provided with threads, in the front portion of the screwdriver hand tool c h a r a c t e r i z e d in that the ring-shaped holder (6) of the stop member is provided with a forwardly pointing finger (7) that is positioned parallel to the screwdriver bit (2) at a small distance from the bit (2) with a tip located in desired position in relation to the tip of the screwdriver bit (2).

2. Device according to claim 1, c h a r a c t e r i z e d in that a rotateable, easily removable sleeve (4) is affixed to the front portion of the screwdriver hand tool (1) in which sleeve (4) the boring provided with threads for the stop member holder (6) is situated.

3. Device according to claim 1 or 2, c h a r a c t e r i z e d in that a ratch member (9,10,11) placed between the stop member holder (6) and the boring provided with threads (5) is arranged to indicate a number of, suitably four, equally interspaced distinct positions for each revolution when turning the holder (6) in relation to the boring provided with threads in the front portion of the screwdriver hand tool (1).

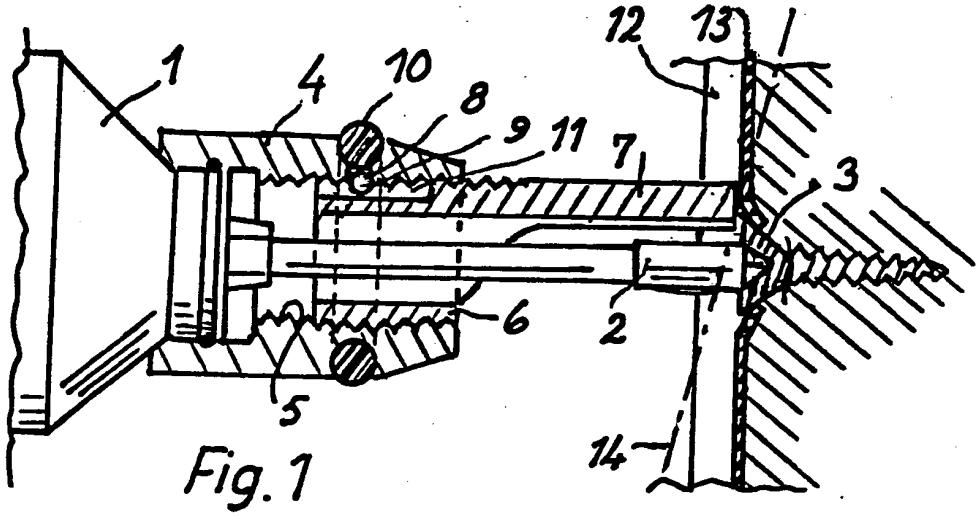

Fig. 1

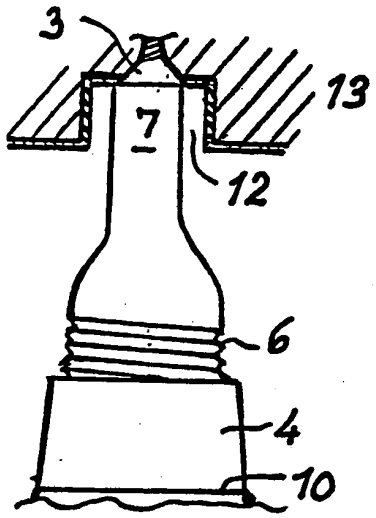

Fig. 2

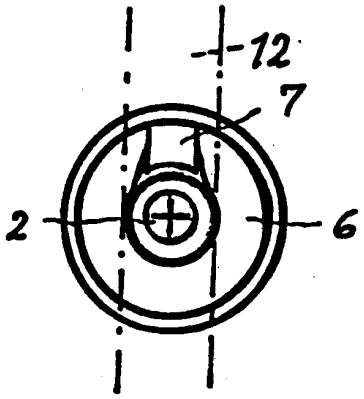

Fig. 3

INTERNATIONAL SEARCH REPORT

International Application No PCT/SE 92/00141

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all)[6]

According to International Patent Classification (IPC) or to both National Classification and IPC

IPC5: B 25 B 21/00, 23/00

II. FIELDS SEARCHED

Minimum Documentation Searched[7]

Classification System	Classification Symbols
IPC5	B 25 B; B 25 F

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in Fields Searched[8]

SE,DK,FI,NO classes as above

III. DOCUMENTS CONSIDERED TO BE RELEVANT[9]

Category *	Citation of Document,[11] with indication, where appropriate, of the relevant passages[12]	Relevant to Claim No.[13]
A	DE, C2, 3141248 (SANYO INDUSTRIES, LTD. ET AL) 18 September 1986, see the whole document --	1
A	DE, B2, 2501189 (ATLAS COPCO AB) 23 February 1978, see thewhole document, particulary the figures --	1
A	EP, A2, 0155745 (BLACK & DECKER INC.) 25 September 1985, see the whole document, particulary the figures --	1
A	US, A, 4592257 (P. DüRR) 3 June 1986, see the whole document --	1

* Special categories of cited documents: [10]

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IV. CERTIFICATION

Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
18th May 1992	1992 -06- 17
International Searching Authority	**Signature of Authorized Officer**
SWEDISH PATENT OFFICE	Maria Lundström

Form PCT/ISA/210 (second sheet) (January 1985)

III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)

Category *	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No
A	DE, B2, 2549153 (ALTENLOH, BRINCK & CO.) 3 May 1978, see the whole document --	1

ANNEX TO THE INTERNATIONAL SEARCH REPORT ON INTERNATIONAL PATENT APPLICATION NO.PCT/SE 92/00141

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report.
The members are as contained in the Swedish Patent Office EDP file on 28/03/92
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Patent document cited in search report	Publication date	Patent family member(s)		Publication date
DE-C2- 3141248	86-09-18	NONE		
DE-B2- 2501189	78-02-23	GB-A-	1496214	77-12-30
		SE-B-C-	377900	75-08-04
		SE-A-	7400513	75-07-16
		US-A-	3934629	76-01-27
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		AU-D-	3730685	85-10-10
		CA-A-	1254773	89-05-30
		US-A-	4647260	87-03-03
US-A- 4592257	86-06-03	CA-A-	1224070	87-07-14
		DE-A-	3242862	84-05-24
		EP-A-B-	0109666	84-05-30
DE-B2- 2549153	78-05-03	NONE		